WHAT IS CLAIMED IS:

1. An element mapping unit that generates a distribution image of an element contained in an object to be analyzed on the basis of the energy spectrum of the electron beam transmitted through the object to be analyzed and the irradiation position of the electron beam on the object to be analyzed; comprising of

an accelerating tube that accelerates the electron beam transmitted through the object to be analyzed;

an electron spectrometer that analyzes into spectrum the energy of the electron beam transmitted through the object to be analyzed;

an electron beam detector that detects the intensity of the electron beam; and

a control unit that controls the accelerating tube so that the electron beam, which has lost specific energy corresponding to the element to be analyzed, enters into a fixed position in the electron beam detector;

and detects the element to be analyzed on the basis of the intensity of the electron beam within a predetermined energy range out of those electron beam intensities detected above.

2. An element mapping unit according to Claim 1, wherein

the control unit contains a storage section that stores in memory the acceleration voltage for accelerating the electron beam that has lost specific energy and the

energy range of the electron beam to be used for detecting the element to be analyzed; and

a computation section that detects the element to be analyzed using the electron beam intensity within the afore-mentioned energy range stored previously.

3. An element mapping unit according to Claim 2, wherein

the storage section stores correction data for eliminating the effect peculiar to the electron beam detector from the detected electron beam; and

the computation section corrects the detected electron beam in accordance with the correction data.

4. An element mapping unit according to Claim 2, wherein

the electron beam detector contains multiple electron beam detecting sections corresponding to the electron beam energy;

the storage section stores the 1st energy range, which is a range including the core loss energy and core loss peak, and the 2nd energy range, which is a range smaller than the core loss energy, out of an inner shell electron energy loss spectrum of the element to be analyzed;

the control unit detects the 1st electron beam intensity detected by the electron beam detecting section corresponding to the 1st energy range and the 2nd electron beam intensity detected by the electron beam detecting section corresponding to the 2nd energy range on the basis

of the stored 1st energy range and 2nd energy range;

the computation section divides the 1st electron beam intensity by the 2nd electron beam intensity so as to detect the element to be analyzed.

5. An element mapping unit according to Claim 2, wherein

the electron beam detector contains multiple electron beam detecting sections corresponding to the electron beam energy;

the storage section stores the 1st energy range, which is a range including the core loss energy and core loss peak, and the 2nd and 3rd energy ranges, which are two ranges each smaller than the core loss energy, out of an inner shell electron energy loss spectrum of the element to be analyzed;

the control unit detects the 1st electron beam intensity detected by the electron beam detecting section corresponding to the 1st energy range, 2nd electron beam intensity detected by the electron beam detecting section corresponding to the 2nd energy range, and 3rd electron beam intensity detected by the electron beam detecting section corresponding to the 3rd energy range on the basis of the stored 1st energy range, 2nd energy range, and 3rd energy range;

the computation section acquires the background intensity of the 1st energy range in accordance with the 2nd electron beam intensity and 3rd electron beam intensity,

and calculates the difference between the 1st energy range and the acquired background intensity so as to detect the element to be analyzed.

6. An element mapping unit according to Claim 2, wherein

the electron beam detector contains multiple electron beam detecting sections corresponding to the electron beam energy;

the storage section stores the plasmon energy range including the plasmon peak out of the inner shell electron energy loss spectrum of the element to be analyzed;

the control unit detects the plasmon loss intensity of the electron beam detected by the electron beam detector corresponding to the plasmon energy range on the basis of the stored plasmon loss energy range; and

the computation section detects the element to be analyzed on the basis of the detected plasmon loss intensity.

7. An element mapping unit according to Claim 1, wherein

the control unit controls the accelerating tube so that the 1st electron beam, which has lost specific energy corresponding to the 1st element to be analyzed, enters into a fixed position in the electron beam detector;

detects the 1st element on the basis of the 1st electron beam intensity in a predetermined energy range out of the detected 1st electron beam intensities;

when the 2nd element to be analyzed is inputted from the outside,

controls the accelerating tube so that the 2nd electron beam, which has lost specific energy corresponding to the 2nd element to be analyzed, enters into a fixed position in the electron beam detector; and

detects the 2nd element on the basis of the 2nd electron beam intensity in a predetermined energy range out of the detected 2nd electron beam intensities;

8. A scanning transmission electron microscope, equipped with the element mapping unit according to Claim 1 or Claim 8, that irradiates electron beams onto an object to be analyzed and supplies the electron beams, which have transmitted through the object to be analyzed, to the element mapping unit.

9. An element mapping method that generates a distribution image of an element contained in an object to be analyzed on the basis of the energy spectrum of the electron beam transmitted through the object to be analyzed and the irradiation position of the electron beam on the object to be analyzed; including

a step for irradiating electron beams onto the object to be analyzed;

a step for accelerating the electron beam transmitted through the object to be analyzed;

a step for analyzing into spectrum the energy of the electron beam transmitted through the object to be analyzed;

a step for detecting the intensity of the electron beam by an electron beam detector;

a step for detecting an element to be analyzed on the basis of the electron beam intensity; and

a step for moving the position of the electron beams to be irradiated onto the object to be analyzed; wherein

the step for acceleration includes a step for accelerating the electron beam so that the electron beam, which has lost specific energy corresponding to the element to be analyzed, enters into a fixed position in the electron beam detector; and

the step for detecting the element includes a step for detecting the element to be analyzed on the basis of the intensity of the electron beam within a predetermined energy range out of those electron beam intensities detected above.

10. An element mapping method according to Claim 9, including

a step for changing the element to be analyzed to other element;

a step for accelerating the electron beam so that the electron beam, which has lost specific energy corresponding to the other element, enters into a fixed position in the

electron beam detector; and

a step for detecting the other element to be analyzed on the basis of the intensity of the electron beam within a predetermined energy range corresponding to the other element out of those electron beam intensities that are detected when the electron beam, which has lost specific energy corresponding to the other element, enter into the electron beam detector.

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